

Claims

- [c1] 1.A vehicle occupant restraint system comprising:
a seat having a seat cushion, a first side, and a second side;
a lap belt extending between a first point adjacent the first side of the seat and a second point adjacent the second side of the seat, the lap belt passing above the seat cushion between the first and second points; and
at least one belt guide disposed adjacent the first side of the seat and engaging the lap belt, the belt guide having a first position relative to the seat wherein it holds the lap belt in a comfort configuration, and the belt guide movable to a second position relatively rearward with respect to the first position wherein it holds the lap belt in a crash restraint configuration.
- [c2] 2.The vehicle occupant restraint system according to claim 1 further comprising a restraints control module operative to command the belt guide to move from the first position to the second position.
- [c3] 3. The vehicle occupant restraint system according to claim 1 further comprising a track disposed adjacent the first side of the seat, the belt guide slidably engaged with the track and movable therealong between the first and second positions.
- [c4] 4.The vehicle occupant restraint system according to claim 1 further comprising an actuator for moving the belt guide between the first and second positions.
- [c5] 5.The vehicle occupant restraint system according to claim 4 wherein the actuator is powered by a pyrotechnic device.
- [c6] 6.The vehicle occupant restraint system according to claim 4 wherein the actuator is powered by compressed gas.
- [c7] 7.The vehicle occupant restraint system according to claim 4 wherein the actuator is powered by a mechanical spring.
- [c8] 8.The vehicle occupant restraint system according to claim 4 wherein the actuator is electrically powered.

- [c9] 9.The vehicle occupant restraint system according to claim 1 wherein the belt guide is attached to the seat when in the first position and is detached from the seat to allow movement to the second position.
- [c10] 10.The vehicle occupant restraint system according to claim 1 further comprising a belt pretensioner disposed adjacent the seat and engaging at least one end of the lap belt, the pretensioner operative to tighten the lap belt around an occupant of the seat.
- [c11] 11.The vehicle occupant restraint system according to claim 1 further comprising at least one shoulder belt.
- [c12] 12.The vehicle occupant restraint system according to claim 1 wherein the lap belt when in the crash restraint configuration extends generally directly between a hip of an occupant of the seat and the first point, and when in the comfort configuration extends generally vertically
- 13.The vehicle occupant restraint system according to claim 1 wherein the lap belt comprises a first segment extending from a first retraction point adjacent the first side of the seat cushion and a second lap belt segment extending from a second retraction point adjacent the second side of the seat cushion, the first and second segments detachably connectable with one another at a center latching point above the seat cushion, and each of the first and second segments having a belt guide movable between the first position and the second position.
- [c13] 14.A vehicle occupant restraint system comprising:
- a seat having a seat cushion, a first side, and a second side;
 - a first lap belt segment extending from a first retraction point adjacent the first side of the seat;
 - a second lap belt segment extending from a second retraction point adjacent the second side of the seat and detachably connectable with the first lap belt segment at a center latching point above the seat cushion in order to be fastened around a seat occupant; and
 - first and second belt guides disposed adjacent the first and second sides of the seat respectively and engaging the first and second lap belt segments

respectively, each belt guide having a first position forward of its respective retraction point wherein it engages its respective lap belt segment and causes the lap belt segment to assume a comfort configuration wherein the lap belt segment is relatively vertical as it extends toward the center latching point from the belt guide, and each belt guide movable to a second position rearward from the first position and allowing its respective lap belt segment to assume a crash restraint configuration wherein the lap belt extends in an upward and forward orientation toward the center latching point from the belt guide.

[c14] 15.The vehicle occupant restraint system according to claim 14 further comprising at least one belt pretensioner operative with at least one of the first and the second lap belt segments.

[c15] 16.The vehicle occupant restraint system according to claim 14 further comprising a restraints control module operative to command the belt guide to move from the first position to the second position.

[c16] 17.The vehicle occupant restraint system according to claim 14 further comprising at least one shoulder belt.

[c17] 18.A method of restraining an occupant in a seat of a motor vehicle having a seat and a lap belt having a first end fixed adjacent a first side of the seat and a second point fixed adjacent a second side of the seat, the method comprising the steps of:

providing at least one belt guide disposed adjacent the first side of the seat and engaging the lap belt, the belt guide having a first position relative to the seat wherein it holds the lap belt in a comfort configuration and a second position relatively rearward with respect to the first position wherein it holds the lap belt in a crash restraint configuration; and

moving the belt guide from the first position to the second position in response to a signal from a restraints control module.

[c18] 19.The method according to claim 18 wherein the step of moving the belt guide comprises sliding the belt guide along a track disposed adjacent the first side of the seat.

[c19] 20.he method according to claim 18 wherein the step of moving the belt guide comprises detaching the belt guide from the seat.

20190701-121235